Plant Species Evaluation Form

Rubus nivalis Douglas

SNOW DWARF BRAMBLE

Family: Rosaceae (CNPS 2018) | **PLANTS Symbol:** RUNI2 (USDA 2018) | **Calif. Endemic:** No (CNPS 2018)

Synonyms/Other Names: *Rubus nivalis* was described by D. Douglas in Hooker (1832). The taxon was moved to *Cardiobatus nivalis* by E.L. Greene in 1906. The latter name is not accepted by contemporary plant taxonomists, but may be encountered in older literature (Tropicos 2018).

Identification Issues: Only three taxa within *Rubus* possess stipules that are triangular-lanceolate to ovate or elliptic in shape, as opposed to thread-like or linear: *R. lasiococcus*, *R. parviflorus*, and *R. nivalis*. *Rubus nivalis* differs from the other two in possessing prickles—albeit small ones (Alice 2012). Even in the absence of flowers, identification of this taxon should be fairly straightforward.

Taxonomy:

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Species In Genus: 400--750 species: worldwide except Antarctica, especially northern temperate. Etymology: (Latin: red; ancient name for bramble, blackberry).

Habit: Perennial herb, prostrate; prickles few to several, small, +- wide-based, curved. Stem: 1--2 mm diam, not angled, glabrous, not glaucous, persisting 1 year, rooting at nodes. Leaf: generally simple, +- 3-lobed, or compound, leaflets (2)3, terminal ovate to cordate, toothed, tip acute to obtuse, abaxially glabrous; stipules 2--4 mm wide, ovate to elliptic. Inflorescence: flowers 1--2. Flower: sepals hairy, +- prickly, nonglandular; petals (4)6--10 mm, narrow-elliptic, pink to magenta (white); filaments thread-like; pistils 4--9, styles long, slender, ovaries finely hairy. Fruit: falling separately, red. eFlora Treatment Author: Lawrence A. Alice.

Status:

Note: Federally recognized Endangered, Threatened, Proposed, or Candidate species under the Endangered Species Act are omitted as they do not meet the definition of a Species of Conservation Concern (FSH 1909.12 § 12.52).

State Listing	G-rank	S-rank	CRPR	R5 FSS	NFP SM	CA BLM
CA: Not listed NV: Not listed OR: Not listed	G4?	CA: S1 NV: Not listed OR: Not listed	2B.3	Not listed	Not listed	Not listed

SWAP:	NNHP:	NNPS:	ORBIC:	OCS:	IUCN:
Not listed	Not listed	Not listed	Not listed	Not listed	Not listed

Expanded abbreviations and citations: State Listing=California Endangered Species Act Listing (CDFW 2018b), Nevada Division of Forestry Fully Protected Plant Species (NAC 527) (NDF 2012), Oregon Department of Agriculture Listed Plants (ODA 2014); G-rank=Global Conservation Status (CDFW 2018a; NatureServe 2018); S-rank=Subnational (state or province-level) Conservation Status (CDFW 2018a; NatureServe 2018; NNHP 2017; ORBIC 2016); CRPR=California Rare Plant Rank

(CNPS 2018); R5 FSS=USDA Forest Service Region 5 Regional Forester Sensitive Plant Species List (USDA 2013); NFP SM=Forest Service and Bureau of Land Management Northwest Forest Plan Survey and Manage Species (USDA 2001); CA BLM=California Bureau of Land Management Designated Sensitive Species (BLM 2010); SWAP=California State Wildlife Action Plan Status (CDFW 2015); NNHP=Nevada Natural Heritage Program Status (NNHP 2017); NNPS=Nevada Native Plant Society Status (NNHP 2017); ORBIC=Oregon Biological Information Center Status (ORBIC 2016); OCS=Oregon Conservation Strategy Species (ODFW 2016); IUCN=International Union for Conservation of Nature Red List Status (IUCN 2017).

Distribution: *Rubus nivalis* is a western North American species, with occurrences reported from British Columbia, Idaho, Washington, Oregon, and California. Within California, it is known only from Del Norte and Siskiyou counties (Alice 2012, CNPS 2018). USDA Forest Service Region 5 lands on which this taxon can be found include Klamath NF and Six Rivers NF (CNDDB 2017).

Sources: *Distribution*: Calflora 2017, CCH 2017, CNDDB 2017. *Layers*: USDA Forest Service, Pacific Southwest National Forests: CPAD 2016. California counties: CDF 2009. *Basemaps*: California inset map: © 2013 National Geographic Society, i-cubed (Esri 2017a). Main map: Esri, DeLorme, USGS, NPS (Esri 2012) and Esri, USGS, NOAA (Esri 2017b).

Locations within California:

Record numbers indicate sites that contain an individual, population, or groups of populations located within ¼ mile of each other, per the California Natural Diversity Database (CNDDB 2017) definition of Element Occurrences (EOs) in California. Official EO numbers for plants in California are determined solely by the CNDDB and are included within the Reference (Source) column for CNDDB data. Duplicate records from the same site are given the same record number and included in red. The Population Info column includes total number of individuals and total number and size of populations/sub-populations when provided. Elevations provided in meters from source have been converted to feet. If not provided in original source, Land Manager information was obtained using the California Protected Areas Database (CPAD 2016) and Quad information was obtained using 24K Quads, SDE Feature Class (CDFG 2013). All other information is directly from the Reference (Source) unless additional citation is given.

Rec. #	Locality	County	Quad	Reference (Source)	Date Last Observed	Population Info	Threats	Land Manager	Elev. (ft.)
1	SOUTHEAST OF BEAR BASIN BUTTE NEAR SOUTH FORK SMITH RIVER, SIX RIVERS NATIONAL FOREST.	Del Norte	Devils Punchbowl (4112376)	CNDDB, May 2017 (EO 1)	Jul-1985	100+ PLANTS OBSERVED IN 1985. NOTE: MAPPED LOCATION DOES NOT MATCH SOURCE'S TRS; IT DOES MATCH SOURCE'S DIRECTIONS TO SITE.	TIMBER HARVEST ACTIVITY.	Six Rivers NF	3550
2	ALONG THE BRIDGE CREEK TRAIL WITHIN BRIDGE CREEK RESEARCH NATURAL AREA, KLAMATH NATIONAL FOREST.	Siskiyou	Medicine Mtn. (4112343)	CNDDB, May 2017 (EO 2)	1985	OBSERVED DURING SURVEYS OF THE BRIDGE CREEK RESEARCH NATURAL AREA, AROUND 1985.		Klamath NF	
2	Bridge Creek Research Natural Area Klamath National Forest	Siskiyou	Medicine Mtn. (4112343)	Calflora, May 2017 (ce382)	1-Jan-1985	1+ individuals		Klamath NF	2648

Rec. #	Locality	County	Quad	Reference (Source)	Date Last Observed	Population Info	Threats	Land Manager	Elev. (ft.)
3	TRIBUTARY OF NORTH FORK DUNN CREEK, JUST NORTH OF ROAD 630 ABOUT 0.5 AIR MILE SOUTH OF OR/CA STATE LINE.	Del Norte	Polar Bear Mtn. (4112385)	CNDDB, May 2017 (EO 3)	17-Aug-1999	400-500 PLANTS OBSERVED IN 1999.		Siskiyou NF	4100
4	JUST S OF THE HEADWATERS OF NORTH FORK DUNN CREEK, NEAR THE OR/CA STATE LINE ALONG ROAD 012, SISKIYOU NATIONAL FOREST.	Del Norte	Polar Bear Mtn. (4112385)	CNDDB, May 2017 (EO 4)	20-Jul-1999	TWO NORTHERN POLYGONS HAD 2300 PLANTS IN 1998. TWO WESTERN POLYGONS HAD 110 PLANTS IN 1999. A 1961 HOBART COLLECTION FROM "DUNN'S CREEK SWAMP...S SLOPE LEADING TO LITTLE GRAYBACK MTN, 0.25 MI S OF OREGON LINE" ALSO ATTRIBUTED TO THIS SITE.	PORTIONS MAY BE NEGATIVELY IMPACTED BY CANOPY OPENING DISTURB-ANCE ASSOCIATED WITH CLEARCUTS.	Siskiyou NF	4400
4	Dunnís Creek Swamp, about 2 miles NE of the Beer homestead on the Upper East Fork of Illinois River; South slope leading to Little Grayback Mountain, 0.25 mile south of Oregon Line	Del Norte	Polar Bear Mtn. (4112385)	CCH, Jan 2017 (RSA145548)	9-Dec-1961			Siskiyou NF	4101

Distribution on National Forest System (NFS) Lands:

(Please see Reference column of Locations table above for references pertaining to Record Numbers indicated on NFS lands.)

National Forest System (NFS) lands	Record #s (from Locations table above)	CNDDB EOs	Non-CNDDB Records	Recent (seen in past 20 yrs.)	Historic (not seen in past 20 yrs.)	Most Recent Obs.	EOs/ Recs. (5 mile buffer)	Total Records on NFS lands
Angeles:	-	-	-	-	-	-	-	0
Cleveland:	-	-	-	-	-	-	-	0
Eldorado:	-	-	-	-	-	-	-	0
Inyo:	-	-	-	-	-	-	-	0
Klamath:	2	1	0	0	1	1985	3	1
Lake Tahoe Basin MU:	-	-	-	-	-	-	-	0
Lassen:	-	-	-	-	-	-	-	0
Los Padres:	-	-	-	-	-	-	-	0
Mendocino:	-	-	-	-	-	-	-	0
Modoc:	-	-	-	-	-	-	-	0
Plumas:	-	-	-	-	-	-	-	0
San Bernardino:	-	-	-	-	-	-	-	0
Sequoia:	-	-	-	-	-	-	-	0
Shasta-Trinity:	-	-	-	-	-	-	-	0
Sierra:	-	-	-	-	-	-	-	0
Six Rivers:	1	1	0	0	1	Jul-1985	0	1
Stanislaus:	-	-	-	-	-	-	-	0
Tahoe:	-	-	-	-	-	-	-	0
Totals:	N/A	2	0	0	2	N/A	3	2

Demographic and Population Trends: Three of the four California occurrences of *Rubus nivalis* have information on population size. One of these consists of ~100 individuals, one has 400-500, and the last encompasses greater than 2,300 plants (CNDDB 2017). From these sparse data, it can be inferred that occurrences usually consist of a few hundred to a few thousand individuals, but further field work will be required for an accurate understanding of demography in this species.

Life History: *Rubus nivalis* is a perennial, evergreen vine occurring in coniferous forests of western North America. It flowers between June and August (CNPS 2018), producing a white- to pink bloom up to 2 cm in diameter (Alice 2012). The flowers conform to a generalist pollinator

syndrome, and are visited by a host of insects from the orders Hymenoptera, Coleoptera, Diptera, and Lepidoptera. Among the Hymenoptera, both honeybees (*Apis*: Apidae) and bumblebees (*Bombus*: Apidae) are important visitors with confirmed pollination efficacy, as are leaf-cutting bees (*Osmia*: Apidae). Other bees have been documented as probable pollinators—including Megachilidae, Colletidae, Halictidae, and Andrenidae. Three beetle families visit *Rubus*, along with four fly families and seven families of moths and butterflies. Pollination efficacy has not been established in these cases (CPC 2018). In *R. ulmifolius*, 80% of diaspores are dispersed by one of just four passerine birds (Jordano 1984); it is likely that birds are the primary agents of dispersal in *R. nivalis* as well.

Diversity: *Rubus* is a genus of 400-750 species, distributed globally but reaching its highest species richness in the temperate northern hemisphere (Alice 2012). The genus is ecologically and economically important (including ornamental taxa, fruit crops, invasive weeds, and early successional species), and encompasses tremendous morphological diversity. Agamospermy, polyploidy, and hybridization make species delimitation problematic in *Rubus* (Alice 2002). Twelve subgenera are recognized, with *R. nivalis* placed in *Chamaebatus*, a group with affinities to eastern Asia. One phylogenetic analysis identified six significant clades within the genus, and suggested a center of origin in eastern Asia or western North America. The same analysis revealed why infrageneric classification remains in a state of flux: traits traditionally used to delineate groups are strongly homoplastic; biogeography and ploidy are more informative than morphology (Alice and Campbell 1999). *Rubus* is rich in phytochemicals, and has a long history of use in Chinese traditional medicine, in which at least 47 species have been used to treat 40 conditions (Wang 2011).

Habitat: *Rubus nivalis* occurs in North Coast coniferous forest, at elevations between 1,085 and 1,350 meters (CNPS 2018). Anecdotal evidence suggests this taxon has an affinity for deep, well-developed soil. Woody taxa frequently associated with *R. nivalis* include: *Pseudotsuga menziesii*, *Abies concolor, Acer macrophyllum, Taxus brevifolia, Berberis nervosa, Castanopsis chrysophylla, Arbutus manziesii*, and *Pinus lambertiana* (CNDDB 2017).

Habitat Status or Trend: Within California, *Rubus nivalis* is found solely in the Klamath Range Bioregion. This area has played host to a remarkable diversification in plant species, as a consequence of its complex geology and long history of isolation (Whittaker 1960). The region is one of six globally important temperate forest biodiversity hotspots, having served as a climatic refugium during the Pleistocene. More than a century of land use (including logging, mining, grazing and modification of fire regimes) has significantly altered much of the region. Only 28% of the old-growth forest remains, and ongoing human impacts continue to degrade wild communities, especially in mesic lowland and mid-elevation areas, encompassing the elevation range of *R. nivalis*. The scale and speed of anthropogenic climate change might exceed the capacity of the Klamath region to provide refugia for taxa of low mobility and narrow ecological requirements, though careful management may partially mitigate this risk (Olson et al. 2012).

Capacity for the Species to Disperse: The aggregate fruits of *Rubus* contain an abundance of seeds, and are particularly attractive to frugivorous birds (Jordano 1984). This combination of

traits makes dispersal over medium to long distances very efficient. In addition, self-pollination is common in *Rubus*, occurring via direct contact between inward-turning senescent stamens and the receptive stigma (Nybom 1985). This capacity is commonly associated with establishment after long-distance dispersal (Baker 1955).

Threats: Clear-cutting activity may pose a threat to this species, both though direct disturbance and via shifts in light and microclimate regime caused by changes in canopy openness (CNDDB 2017). However, there is limited evidence to suggest that *R. nivalis* is tolerant of limited logging impacts (Halpern 1989). Additional field work may reveal further anthropogenic impacts.

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Formatting: Form is set up as 508 compliant. Please use the "styles" if further formatting is necessary.

Purpose: This is to maintain the best available science on a species that could be used by the Forest Service in a variety of functions. Specifically, there would be additional steps and evaluations to determine whether or not this species would be considered a Species of Conservation Concern under the 2012 Planning Rule or a Sensitive Species under the 1982 Planning Rule.

Additional Considerations at the Forest Level: Habitat amount and juxtaposition of both the species and habitat locations.